Each of the unipolar control circuits includes a solid state switch located between a motor current input and the source of direct current. The degree to which the solid state switch allows current to flow to the motor is controlled by an input bias signal to the switch. Current limiting for adjusting the input bias signal according to the current flowing through the motor is provided in one way of controlling the motor movement. The switch adjusts the input bias to the solid state switch such that less current flows through the motor when a predetermined period of current limiting has occurred. Also a current detection can be used to detect the magnitude of current being drawn through the motor and if the magnitude exceeds a predetermined level for a predetermined time, the input bias signal to the switch can be reduced.

IN THE CLAIMS

The claims have been rewritten as follows:

1. (Amended) A motor control circuit for a direct current electric motor having a pair of direct current inputs supplied respectively from negative and positive current sources wherein said motor is actuated to turn a shaft in one of two directions dependant on which polarity of current is being provided to said motor, said motor control circuit comprising:

a pair of unipolar control circuits wherein at least one of said unipolar control circuits is connected between a respective current source and a current input to said motor, wherein at least one of said unipolar control circuits is adapted to operate said motor in one of said two directions.

2. (Amended) A motor control circuit according to claim 1 wherein each of said unipolar control circuits is substantially identical.

3. (Amended) A motor control circuit according to claim 1 wherein each of said unipolar control circuits further comprises:

a solid state switch located between said motor current input and said source of direct current wherein the degree to which said solid state switch allows current to flow to said motor is controlled by an input bias signal to said switch,

a current limiting member for adjusting said input bias signal according to the current flowing through said motor, such that said solid state switch adjusts said input bias to said solid state switch such that less current flows through said motor when a predetermined period of current limiting has occurred.

4. (Amended) A motor control circuit according to claim 3 wherein said current limiting member further comprises a temperature compensation circuit.

6. (Amended) A motor control circuit according to claim 3 wherein said solid state switch member is arranged to not operate said motor when said current limiting is occurring for a further predetermined period of time.

7. (Amended) A motor control circuit according to claim 3 wherein said solid state switch member is arranged to not operate said motor when current drawn by said motor exceeds a predetermined threshold current for a predetermined period of time.

8. (Amended) A motor control circuit according to claim 3 wherein said current limiting member comprises:

a motor current sensing circuit comprising a shunt resistor arranged to carry a

proportion of the current flowing through said motor and provide a respective voltage to the base of a bipolar transistor which is arranged to turn on at a predetermined voltage level representative of the current flowing through said motor at which it should be switched off, such that said bipolar transistor turns on when said predetermined voltage level is reached and which decreases the input bias to said solid state switch to lessen the current through said motor.

9. (Amended) A motor control circuit according to claim 1 wherein at least one of said pair of unipolar control circuits conducts current to complete the circuit to allow said motor to operate.

10. (Amended) A motor control circuit according to claim 1 wherein at least one of said unipolar control circuits further comprises:

a solid state switch located between said motor current input and said source of direct current wherein the degree to which said solid state switch allows current to flow to said motor is controlled by an input bias signal to said solid state switch,

a current detection member to detect the magnitude of current being drawn through said motor and if said magnitude exceeds a predetermined level for a predetermined time reduce said input bias signal to said switch.

REMARKS

Claims 1-4 and 6-10 have been amended. Support for these amendments can be found throughout the specification and drawings, as originally filed.